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**THREE NEW WORM SNAKES OF THE
GENUS LEPTOTYPHLOPS**

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Recently, in the course of a survey of the worm snakes of the *dulcis-humilis* group in the United States and northern Mexico, I examined a number of Central and South American specimens of *L. albifrons* and related species. This was by no means an exhaustive study, yet it was immediately evident that *L. albifrons*, as usually defined, is a complex of a number of species and subspecies. Subsequently learning that my good friend Dr. E. H. Taylor of the University of Kansas was engaged in a similar survey, it seemed desirable that I limit my studies to the *dulcis-humilis* group to avoid duplication. However, in the exchange of correspondence between Dr. Taylor and myself, it appeared that I had come upon three new species of which specimens had not yet been available to him, and Dr. Taylor has courteously suggested that I proceed to describe them.

The first is a new form from British Guiana and Trinidad, to which I have given the name

***Leptotyphlops tenella* sp. nov.**

Figures 1a and 1b.

Type.—No. 14269 in the collection of the American Museum of Natural History. Collected at Kartabo, British Guiana, in 1919, by Dr. William Beebe.

Diagnosis.—A worm snake of the *albifrons*-group, but different from the typical form in having a contact between the supraoculars and the anterior

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supralabials, whereas in the other forms this contact is prevented by the junction of the nasal and ocular.

Description of the Type.—Length over-all 177 mm.; length of tail 11 mm.; ratio of total length to tail length 16.1. Diameter of body 3.5 mm.; ratio of body length to diameter 50.

The body is substantially cylindrical; the head is slightly widened and flattened. The tail is little reduced in diameter anterior to the terminal cone, which ends in a sharp spine.

The snout is curved, not sharp, and overhangs the lower jaw. The rostral is curved from the underside of the upper jaw over the snout, reaching back only to the anterior edge of the eye. The rostral tapers slightly in width; at the level of the eye it has the same width as the nasal. The posterior tip of the rostral is rounded. The supralabial series on each side comprises a nasal, a single anterior supralabial, an ocular, and a posterior supralabial. The nasals are divided, by a suture through the nostril, into two parts substantially equal in size. The suture rises toward the rostral. The anterior supralabial is much higher than wide and almost reaches the level of the center of the eye, at which point it contacts the outer tip of the supraocular; its contact with the lip is narrower than that of either the nasal or the ocular. The ocular is widest at the eye level; the eye is placed anterior to the center. The posterior supralabial is higher than wide; it is triangular, with its greatest width along the edge of the lip. The supraoculars are attenuated, as is usual in the *albifrons*-group as opposed to *dulcis*. They extend forward and outward from contact with the frontal to pointed contacts with the anterior supralabials. Of the mid-dorsal series the fourth scale is definitely the largest. The parietals are considerably larger than the occipitals (posterior parietals) and contact the posterior supralabials; they are relatively larger than in typical *albifrons*. The mental is small. There are 4 infralabials on each side, the last being the largest. The chin shields are small, gradually increasing in size toward the neck.

The body is covered with 14 rows of smooth and imbricate scales, all rows being of equal size. A lateral row on each side is dropped 2 scales before the anus. The anal plate is entire. There are 10 scale rows around the tail. The median dorsal series numbers 219; there are 16 subcaudals.

The head is dark except for an *albifrons*-type white spot covering the upper half of the rostral. The lower halves of the posterior supralabials are light. Also there are, faintly evident on the front of the snout and sides of the head, a number of light indentations or pores. The chin shields are tan, spotted with brown.

Dorsally the body is dark brown, but as the lateral edges of the scales are lighter, a pattern appears as a series of serrated longitudinal light lines. The ventrum is lighter brown than the back and is lighter anteriorly than posteriorly. The tail cone is white, as is usual in the snakes of the *albifrons*-group. Above only the scales next to the tail spine are light; below the white extends to the third subcaudal scale. These color notes apply to an alcoholic specimen.

Variations.—In addition to the type specimen one more specimen (AMNH 14270) is available from the type locality, and six from the Island of Trinidad (Carnegie Museum 4888-92, Mount Saint Benedict; and 4893, El Dorado, Saint George County). The data on these are as follows:

<i>Number</i>	<i>Dorsals</i>	<i>Sub caudals</i>	<i>Length over-all</i>	<i>Tail length</i>	<i>Body diameter</i>	<i>L/T</i>	<i>L/D</i>
AMNH 14270	228	18	137	10	3.3	13.7	42
Car. Mus. 4888	229	17	108	7	2.3	15.4	47
Car. Mus. 4889	222	17	175	11	4.1	15.9	43
Car. Mus. 4890	224	17	154	11	3.2	14.0	48
Car. Mus. 4891	224	18	155	10½	3.5	14.8	44
Car. Mus. 4892	223	15	89	5	2.3	17.8	39
Car. Mus. 4893	218	16	142	10	3.2	14.2	44

The rostral white spot on the Trinidad specimens is relatively larger than on those from the mainland, as it extends well beyond the borders of the rostral. Also, the white tail cone engages more caudal scales.

Remarks.—Among the specimens of the *albifrons*-group which I have had available from South and Central America these from British Guiana and Trinidad have been the only ones having the anterior supralabials in contact with the supraoculars, for this is not normal in *albifrons* or related forms. The available specimens indicate that in this area the character is quite consistent, although in one specimen (Carnegie Museum 4890) these scales fail to make contact on the right side of the head. It is apparent that additional specimens may show intergradation with *albifrons*, but full specific recognition appears justified until such a relationship is demonstrated.

Amongst the South American worm snakes that I have examined is a single exceedingly attenuated specimen from Peru which I describe as

***Leptotyphlops subcrotilla* sp. nov.**

Figures 2a and 2b.

Holotype.—No. 14554 in the collection of the California Academy of Sciences. Collected at Grau Tombes, Northern Peru, by G. Baer in 1902.

Diagnosis.—A worm snake of the *albifrons*-group of the genus *Leptotyphlops* characterized by extreme attenuation and a dorsal scale count considerably exceeding that of any other species of the genus now known from South America.

Description of the Type.—Length over-all 188 mm.; length of tail 17 mm.; ratio of total length to tail length 11.1. Diameter of body 2.3 mm.; ratio of length to diameter 82.

The body is cylindrical. The snout is blunt and curved, and overhangs the inset lower jaw. The rostral is curved over the head and reaches back to a

point above the anterior edge of the eye; it is as wide as the nasal at the level of the eye. The posterior end of the rostral is rounded; it contacts the prefrontal and separates the nasals. The supralabial series on each side comprises a nasal, a single anterior supralabial, an ocular, and a posterior supralabial. Each nasal is divided horizontally, the lower section being the smaller. The anterior supralabial is higher than wide and does not quite reach the center of the eye. The ocular is large and hexagonal, the lower edge occupying more lip space than any other scale. The eye is placed forward of the center. The posterior supralabial is about as high as wide; it is subtriangular, with the base at the commissure. The infralabials number 4 on one side and 3 on the other. The scales of the mid-dorsal series on the head are the same in size as the succeeding dorsals. The supraoculars are about twice as long as wide and are directed outward from the frontal at an angle of about 75 degrees with the mid-dorsal line. The outer ends contact the tops of the oculars. The parietals are larger than the occipitals and contact the posterior supralabials; the occipitals are prevented from this contact by a temporal on each side.

The body is covered with 14 rows of smooth and imbricate scales of equal size, no dorsal or ventral enlargement being evident. One lateral scale row on each side is dropped about 8 scales anterior to the anus, and another pair at the beginning of the tail, so that there are 10 scale rows at the center of the tail. The anal plate is entire. There are 331 median dorsals from prefrontal to tail spine, and 17 subcaudals.

The head is dark brown except for an *albifrons*-type white spot covering the upper half of the rostral. The posterior upper lip and chin shields are light. The body is dark brown, but with scale edges somewhat lighter, so that longitudinal lines are simulated; however, these are not as conspicuous as in most of the *albifrons*-group. Below the color is somewhat lighter brown. The tail tip is white, but only as far back as the first scales adjacent to the terminal spine.

Remarks.—The high dorsal scale count of this species will serve to distinguish it from the other forms of *Leptotyphlops* now known from South America. The type has 331 dorsals, while, of 32 other specimens of various species from South America, including others from Peru, none exceeds 272. So large a difference is far beyond the range of variation encountered in any species within a single area.

Lastly, I find in looking over the island specimens, that, while the species from Watling Island in the Bahamas has hitherto been considered *L. albifrons*, it differs from that mainland form in several important characters. I have therefore named it, after the island's most famous visitor,

Leptotyphlops columbi sp. nov.

Figures 3a and 3b.

Type.—No. 1364 in the collection of the Carnegie Museum of Pittsburgh,

collected on Watling (or San Salvador) Island, Bahama Islands, by W. W. Worthington, in 1909.

Diagnosis.—A small worm snake of the genus *Leptotyphlops*, having supraoculars, but differing from *albifrons* and related species in having no white blotch on the snout or tail tip, no light dorsal longitudinal lines, and a higher subcaudal scale count than any known species of the *albifrons*-group. From *dulcis* and related species it differs in its dark color and high number of subcaudals. From *bilineata* it differs in having the ocular touching the lip.

Description of the Type.—Length over-all 183 mm.; length of tail 13 mm.; ratio of total length to tail length 14.1. Diameter of body 3.2 mm.; ratio of body length to diameter 57.

The body is almost cylindrical, the head being only slightly distinct. The tail is somewhat reduced in diameter and terminates in a sharp spine.

The head is moderately depressed, with a prominent, rounded, overhanging snout. The rostral is curved from the underside of the upper jaw over the snout, reaching back as far as the front of the eye. The posterior tip is rounded. The supraocular series comprises on each side an inferior nasal, a single anterior supralabial, an ocular, and a posterior supralabial. The nasals are divided and are somewhat narrower than the widest part of the oculars. The inferior nasal is much smaller than the upper; the nasal suture rises upward toward the rostral. The superior nasals are prevented from meeting on the mid-dorsal line by the contact between the rostral and prefrontal. The anterior supralabial is small and is higher than wide; it is narrower than the inferior nasal. The ocular is large and reaches the lip. The eye is above the top of the anterior supralabial and is placed toward the front of the ocular. The posterior supralabial is as wide as high; it narrows toward the top. The supraoculars are relatively large, considerably exceeding in size the scales of the dorsal series. They are prevented from meeting by the prefrontal-frontal contact, and are directed forward and outward on either side of the prefrontal. Of the mid-dorsal series the interparietal is slightly larger than either the prefrontal or frontal. The parietals are large, twice as high as wide, and contact the posterior supralabials. The occipitals (or posterior parietals) are also large; they are prevented from contacting the posterior supralabials by a small temporal on each side. The mental is small and triangular. There are four infralabials on each side, the posterior being enlarged and hidden by the overhanging upper jaw. The chin shields are small and regular, and enlarge posteriorly.

The body is covered with 14 rows of smooth and imbricate scales of uniform size, neither the mid-dorsal nor mid-ventral being conspicuously enlarged. There are 10 rows around the tail, two rows being dropped 6 scales anterior to the anal plate, and two at the base of the tail. The anal is entire. The median dorsal series from prefrontal to tail spine numbers 261, the subcaudals 24.

The 9 dorsal scale rows (in alcohol) are very dark brown—nearly black—in solid color without lines, punctations, or light borders. The ventral color is somewhat lighter, the 3 mid-ventral rows being medium brown. The lip edges,

particularly the mental, are somewhat lighter; this is also true of the anal. The rostral and the sides of the head, as far back as the posterior supralabials, temporals, and the lower edges of the parietals, are dotted with tiny pores.

Variations.—Four paratypes from the same series are available, the data on them being as follows:

<i>Number</i>	<i>Dorsals</i>	<i>Sub caudals</i>	<i>Length over-all</i>	<i>Tail length</i>	<i>Body diameter</i>	<i>L/T</i>	<i>L/D</i>
1360	263	24	136	10½	2.3	12.9	59
1361	259	25	139	11½	2.4	12.1	58
1362	260	24	148	12	2.5	12.3	59
1363	255	25	124	10½	2.3	11.8	54

These paratypes are similar to the type in all important characteristics. Two are somewhat lighter in color.

Remarks.—The snakes of Watling Island have hitherto been classified as *albifrons*, and the long supraoculars indicate a closer affinity to *albifrons* than to *dulcis*. However, the absence of the characteristic *albifrons* white blotches on the rostral and tail, and also the absence of light longitudinal lines, will readily distinguish *columbi* from most of the mainland snakes of the *albifrons*-group. The high subcaudal scale count (minimum 24) is an even more important difference. *Dulcis* reaches only 17 and mainland *albifrons* (no doubt a complex of several species and subspecies) usually varies between 16 and 21. One specimen from Bolivia has 23 subcaudals, the maximum noted to date.

For the loan of specimens used in this study I owe thanks to the following individuals and institutions: Dr. G. K. Noble and Mr. Charles M. Bogert, American Museum of Natural History; Mr. Joseph R. Slevin, California Academy of Sciences; Mr. M. Graham Netting, Carnegie Museum of Pittsburgh; and Mr. Karl P. Schmidt, Field Museum of Natural History.

Mr. James Duell has had the laborious duty of counting the scales on these tiny snakes, a task requiring skill and patience, and to him I wish to express my gratitude. Credit for the illustrations is to be given Mr. Norman Bilderback.

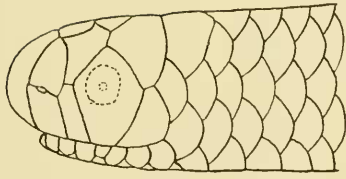


Fig. 1a

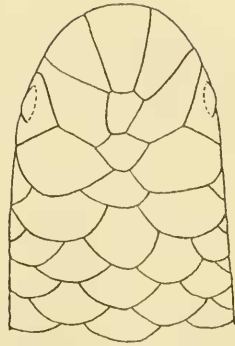


Fig. 1b

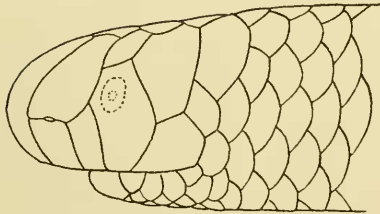


Fig. 2a

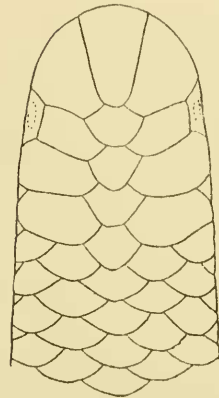


Fig. 2b

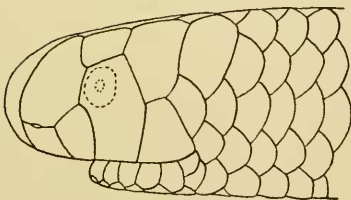


Fig. 3a

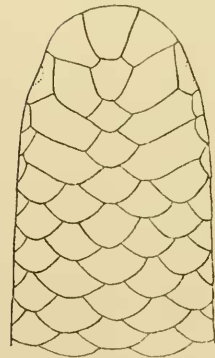


Fig. 3b

- Fig. 1a-b. *Leptotyphlops tenella*, sp. nov.
 Fig. 2a-b. *Leptotyphlops subrotilla*, sp. nov.
 Fig. 3a-b. *Leptotyphlops columbi*, sp. nov.